

SYSTEM AND METHOD FOR LOGINS

CLAIM OF PRIORITY AND CROSS REFERENCE TO RELATED APPLICATIONS

5 This application claims the benefit of U.S. Provisional Patent Application entitled "Targys System," filed March 31, 2000 and having serial no. 60/193,422, and copending U.S. Utility Patent Application entitled, "Customer Care and Billing System," having attorney docket no. 51207-1070, filed on March 28, 2001, which also claims priority to German Patent Application No. 00106948.3-2201, entitled "Customer
10 Care and Billing System," filed March 31, 2000, all of the foregoing of which are now pending and are incorporated herein by reference.

FIELD OF THE INVENTION

15 The present invention generally relates to computers and computer software, and more particularly, to a system and method for logging in to a system.

DESCRIPTION OF RELATED ART

Typically, today's computing and networking environments are complex and geographically distributed, and in the future they will be even more so. However, as the
20 computer and networking environments become more sophisticated, so do the unauthorized users. Generally, today, the biggest threat to any system is from unauthorized access from an inside or outside party. However, in a drive to become more secure, there is the competing virtue that the security for any system must be simple for authorized users to utilize. If a security system is too complex, authorized

users will look for ways to simplify the process, which could put any system in a compromising position.

Thus, a heretofore-unaddressed need exists in the industry to address the aforementioned and/or other deficiencies and inadequacies.

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SUMMARY OF THE INVENTION

The present invention provides a system and method for securing login to a system. In architecture, the system includes an identifier that identifies a user to login, and a valadator that validates the user access privileges. An entry mechanism allows the user to enter the system if the user access privileges are valid.

The present invention can also be viewed as providing a method for securing login to a system. In this regard, the preferred method can be broadly summarized by the following steps. The method operates by (1) identifying a user to login; (2) validating the user access privileges, and (3) allowing the user to enter the system if the user access privileges are valid.

Other features and advantages of the present invention will become apparent to one with skill in the art upon examination of the following drawings and detailed description. It is intended that all such additional features and advantages be included herein within the scope of the present invention.

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BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings incorporated in and forming a part of the specification illustrate several aspects of the present invention, and together with the description, serve to explain the principles of the invention. Moreover, in the drawings,

like reference numerals designate corresponding parts throughout the several views. In the drawings:

FIG. 1 is a block diagram illustrating an example of a network in which the login system may be implemented.

5 FIG. 2 is a block diagram illustrating an example of a computer system utilizing an operating system and login system of the present invention.

FIG. 3 is a flow chart illustrating an example of the process flow of the login system of the present invention, as shown in FIG. 2.

10 FIG. 4 is a block diagram illustrating the user and component classes, the class and attributes for a user, as shown in FIG. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference will now be made in detail to the description of the invention as illustrated in the drawings. While the invention will be described in connection with these drawings, there is no intent to limit it to the embodiment or embodiments disclosed therein. On the contrary, the intent is to cover all alternatives, modifications, and equivalents included within the spirit and scope of the invention as defined by the appended claims.

Referring now to the drawings, wherein like reference numerals designate corresponding parts throughout the drawings, FIG. 1 is a block diagram that portrays a diagram of a network that illustrates the flexibility, expandability, and platform independence in which the Login system of the present invention may be implemented. Referring to FIG. 1, a series of client computers 11a, 11b, 11c are connected to a server computer 14 via a network 16. The network 16 may be, for example, but is not limited

to, a dial-in network, local area network (LAN), wide area network (WAN), public switched telephone network (PSTN), Intranet, Internet, Ethernet type networks, and the like. The client computers 11a, 11b, 11c (hereinafter, 11) may be located within a LAN, WAN, PSTN, Intranet, Internet, Ethernet type networks, or the like. It should be noted 5 that the number of client computers and server computers may differ from the number presently illustrated. Further, it should also be noted that, that the preferred embodiment of the invention describes the functionality provided by a server computer 14.

An example of a general-purpose computer that can implement the login system 10 50 of the present invention is shown in FIG. 2. The Login system 50 of the invention can be implemented in software (e.g., firmware), hardware, or a combination thereof. In one embodiment, the Login system 50 is implemented in software, as an executable program, and is executed by a special or general purpose digital computer, such as a personal computer (PC; IBM-compatible, Apple-compatible, or otherwise), workstation, 15 minicomputer, personal digital assistant (PDA) or mainframe computer.

Generally, in terms of hardware architecture, as shown in FIG. 2, the computers 11 or 31 include a processor 21, memory 22, and one or more input and/or output (I/O) devices 23 (or peripherals) that are communicatively coupled via a local interface 24. The local interface 24 can be, for example but not limited to, one or more buses or other 20 wired or wireless connections, as is known in the art. The local interface 24 may have additional elements, which are omitted for simplicity, such as controllers, buffers (caches), drivers, repeaters, and receivers, to enable communications. Further, the local interface 24 may include address, control, and/or data connections to enable appropriate communications among the aforementioned components.

The processor 21 is a hardware device for executing software that can be stored in memory 22. The processor 21 can be virtually any custom made or commercially available processor, a central processing unit (CPU) or an auxiliary processor among several processors associated with the computer 11 and/or 14, and a semiconductor based microprocessor (in the form of a microchip) or a macroprocessor. Examples of suitable commercially available microprocessors are as follows: an 80x86 or Pentium series microprocessor from Intel Corporation, U.S.A., a PowerPC microprocessor from IBM, U.S.A., a Sparc microprocessor from Sun Microsystems, Inc, a PA-RISC series microprocessor from Hewlett-Packard Company, U.S.A., or a 68xxx series 5 microprocessor from Motorola Corporation, U.S.A.

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The memory 22 can include any one or combination of volatile memory elements (e.g., random access memory (RAM, such as DRAM, SRAM, *etc.*)) and nonvolatile memory elements (e.g., ROM, hard drive, tape, CDROM, *etc.*). Moreover, the memory 22 may incorporate electronic, magnetic, optical, and/or other types of 15 storage media. Note that the memory 22 can have a distributed architecture, where various components are situated remote from one another, but can be accessed by the processor 21.

The software in memory 22 may include one or more separate programs, each of which comprises an ordered listing of executable instructions for implementing logical 20 functions. In the example of FIG. 2, the software in the memory 22 includes the Login system 50 and a suitable operating system (O/S) 26.

A non-exhaustive list of examples of suitable commercially available operating systems 26 is as follows: a Windows operating system from Microsoft Corporation, U.S.A., a Netware operating system available from Novell, Inc., U.S.A., an operating

system available from IBM, Inc., U.S.A., any LINUX operating system available from many vendors or a UNIX operating system, which is available for purchase from many vendors, such as Hewlett-Packard Company, U.S.A., Sun Microsystems, Inc. and AT&T Corporation, U.S.A. The operating system 26 essentially controls the execution 5 of other computer programs, such as the Login system 50, and provides scheduling, input-output control, file and data management, memory management, and communication control and related services.

The Login system 50 may be a source program, executable program (object code), script, or any other entity comprising a set of instructions to be performed. When 10 a source program, then the program is usually translated via a compiler, assembler, interpreter, or the like, which may or may not be included within the memory 22, so as to operate properly in connection with the O/S 26. Furthermore, the Login system 50 can be written as (a) an object oriented programming language, which has classes of data and methods, or (b) a procedure programming language, which has routines, 15 subroutines, and/or functions, for example but not limited to, C, C++, Pascal, BASIC, FORTRAN, COBOL, Perl, Java, and Ada.

The I/O devices 23 may include input devices, for example but not limited to, a keyboard, mouse, scanner, microphone, *etc.* Furthermore, the I/O devices 23 may also include output devices, for example but not limited to, a printer, display, *etc.* Finally, 20 the I/O devices 23 may further include devices that communicate both inputs and outputs, for instance but not limited to, a modulator/demodulator (modem; for accessing another device, system, or network), a radio frequency (RF) or other transceiver, a telephonic interface, a bridge, a router, *etc.*

If the computer 11 and/or 14, is a PC, workstation, or the like, the software in the memory 22 may further include a basic input output system (BIOS) (omitted for simplicity). The BIOS is a set of essential software routines that initialize and test hardware at startup, start the O/S 26, and support the transfer of data among the 5 hardware devices. The BIOS is stored in ROM so that the BIOS can be executed when the computer 11 and/or 14 is activated.

When the computer 11 and/or 14 is in operation, the processor 21 is configured to execute software stored within the memory 22, to communicate data to and from the memory 22, and to generally control operations of the computer 11 and/or 14 pursuant 10 to the software. The Login system 50 and the O/S 26 are read, in whole or in part, by the processor 21, perhaps buffered within the processor 21, and then executed.

When the Login system 50 is implemented in software, as is shown in FIG. 3, it should be noted that the Login system 50 can be stored on virtually any computer readable medium for use by or in connection with any computer related system or 15 method. In the context of this document, a computer readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer related system or method. The Login system 50 can be embodied in any computer-readable medium for use by or in connection with an instruction execution system, apparatus, or device, such as a 20 computer-based system, processor-containing system, or other system that can fetch the instructions from the instruction execution system, apparatus, or device and execute the instructions.

In the context of this document, a "computer-readable medium" can be any means that can store, communicate, propagate, or transport the program for use by or in

connection with the instruction execution system, apparatus, or device. The computer readable medium can be, for example but not limited to, an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system, apparatus, device, or propagation medium. More specific examples (a nonexhaustive list) of the computer-
5 readable medium would include the following: an electrical connection (electronic) having one or more wires, a portable computer diskette (magnetic), a random access memory (RAM) (electronic), a read-only memory (ROM) (electronic), an erasable programmable read-only memory (EPROM, EEPROM, or Flash memory) (electronic), an optical fiber (optical), and a portable compact disc read-only memory (CDROM)
10 (optical). Note that the computer-readable medium could even be paper or another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance optical scanning of the paper or other medium, then compiled, interpreted or otherwise processed in a suitable manner if necessary, and then stored in a computer memory.

15 FIG. 3 is a data flow diagram illustrating an example of the process flow of the login system 50 of the present invention. The login system 50 provides security that is implemented in the component framework 27 (FIG. 2) using a number of security specific classes that allow definition of an access privilege for classes and attributes for users. The enforcement of the security definitions here is currently the responsibility of
20 the clients. The component framework only allows the definition of the access privileges, but does not use them itself. The access privileges in the framework are defined on class and attribute levels, using the class "component permission" which is herein illustrated in FIG. 4. Access privileges for components are assigned to instance of the "user" class where the system users are modeled. The "user" class is the

fundamental security class in the component framework 27. It contains all the information about a user's name, description, and the default access permissions. Users are those clients that can access a server, and thus, can be end users, Internet users, or other components.

5 The login system 50 is initialized at step 51. At step 52, the login system identifies a user by login and password. At step 53, the login system 50 performs verification of the user by accessing privileges in the component framework 27 (FIG. 2) using the component permission class. The component permission class is herein illustrated with regard to FIG. 4.

10 At step 54, the login system receives access privilege for the components. At step 55, the login system 50 then creates an instance of a user/class instance for all the privileges for the user. The login system 90 then exits at step 59.

Illustrated in FIG. 4 is a block diagram illustrating the user and component classes, the class and attributes for a user.

15 The foregoing description has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Modifications or variations are possible in light of the above teachings.

20 The embodiment or embodiments discussed were chosen and described to provide the best illustration of the principles of the invention and its practical application to thereby enable one of ordinary skill in the art to utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. All such modifications and variations are within the scope of the

invention as determined by the appended claims when interpreted in accordance with the breadth to which they are fairly and legally entitled.

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